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ABSTRACT

Focusing on access to audience through broadcast time, this paper examines the status of research into the economics of broadcasting. The paper first discusses the status of theory in the study of broadcast economics, both as described directly and as it exists in the statement of the basic assumptions generated by prior work and general experience. It then considers the use of that theory within applied research. Finally, it offers some ideas for the integration of theory into the study of broadcast economics through the use of supply and demand models. To this end, the paper confines its definition of broadcasting, or the broadcast industry, to that segment of commercial telecommunications whose signal is broadcast unscrambled to the general public over the standard radio and television bands. (An extensive bibliography is included.) (HOD)

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ECONOMIC THEORY AND BROADCASTING

by

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ABSTRACT

This paper examines the status of research into the economics of broadcasting, with a focus on what can be considered the final good of the broadcasting industry: access to audience through broadcast time. Building upon earlier work on the peculiar structure and features of that good and its marketplace, it builds a simple supply and demand model for the theoretical examination of impacts. The paper concludes by applying that model to the examination of a series of economic impacts in broadcast markets.

Economic Theory and Broadcasting

There is a wide area of research across several disciplines under the general rubric of media economics. Some of this work has dealt with the development and investigation of theory, a great deal more with the social and economic effects of various changes in the media marketplace. This paper proposes to survey, and extend the consideration of, theory in one specific aspect of this field: the economics of broadcasting. It will begin with a cursory examination of this particular area, and an consideration of the basic assumptions entailed in such research.

This area has attracted a fair degree of attention from both traditional economists and communication scholars. To the economist, the field of broadcast economics has deserved attention as a result of several distinctive features. First, it is a heavily regulated industry, which has led to the creation of certain features deemed worthy of intellectual perusal. Among these are issues of special rents resulting from regulation, and of social welfare implications of regulation in the provision of public goods in the form of programming.

Another feature of the industry lies in its unusual production of "dual" goods; that is, broadcasting produces one physical product, programming, which it then trades for another non-physical product, viewers per minute of time, which it then sells access to in order to generate revenue. To the communication scholar, the study of broadcast economics is of interest largely due to the recognition that broadcasting in the United States is commercial, and thus that the motivating factors for the behavior of broadcasters are therefore largely economic. Economic behavior is influenced by several factors related to the structure, production and distribution of goods of one sort or another. These factors can be integrated into various models, which can then be examined and/or analysed in order to determine or predict such behavior. In all cases, the development of economic

models of one form or another can provide a basis for both analysis and prediction. To be able to predict behavior, then, it is useful to understand the economic structure of the industry. nature of the marketplace and the actors contained therein. This paper will first discuss the status of theory in the study of broadcast economics, both as described directly and as it exists in the statement of the basic assumptions generated by prior work and general experience. Then, consideration of the use of that theory within applied research will be made. Finally, some ideas for the integration of theory into the study of broadcast economics through the use of supply and demand models will be attempted.

To this end, this paper will confine its definition of broadcasting, or the broadcast industry, to that segment of commercial telecommunications whose signal is broadcast unscrambled to the general public over the standard radio and television bands. As such, the industry includes normal broadcast stations and networks. Excluded from this definition are cable, program networks available exclusively over cable, non-commercial networks and stations, and pay-TV. In essence, this paper seeks to restrict broadcasting to standard, advertiser-supported broadcast media.

THE STATE OF THEORY

> "Not a single mass medium . . . sells its product or services according to the principles involved in the laws of Supply and Demand, or in the calculation of different cost factors." (Landau and Davenport, 1959, p.291)

The literature on broadcast economics is extensive and ranges from considerations of pure theory to the quantitative cranking out of limited models independent of theory. It is thus somewhat surprising to find so little integrated theory expounded. In spite of the existence of a series of books on the economics of broadcasting, television in particular (cf. Noll, Peck, and McGowan, 1973; Owen, Beebe, and Manning, 1974; Owen, 1975; Levin, 1980), emphasis has been on the study of impact and policy concerns rather than the development and integration of theory. This development has resulted in the mass of applied research being essentially theory-less, resulting in calls such as those by Landau and Davenport (1959), Gerald (1958), and Babe (1983) for continued research into the economics of mass media as well as the integration of theory and application in research (Smith, 1983).

Perhaps, the lack of strict statement and use of theory in applied research is a result of the perception that the basic theory is so simple that it is not necessary to state it explicitly. In fact, one can infer from an examination of much of the impact and policy studies a basic model of economic behavior which might be considered to be an underlying theory: that the broadcaster, in order to make the biggest profits possible, goes after the largest audience possible. Thus economic impact is sometimes stated in terms of impact on audience (cf Park, 1971, 1972).

Most of the applied research in this field extends from such basic assumptions rather than any explicit theoretical model(s). However, this approach is simplistic at best; in fact, it is quite likely to be dead wrong, particularly with regard to the current state of broadcasting.[1] On the other hand, most theoretical considerations have divorced them-

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[1] While there is a demonstrable link between audience size and revenues (whether actual or potential), the link with profits is less certain. Further, there is considerable evidence in radio, as well as in

selves from reality, and thus any specific application to applied research. It is therefore time to attempt to bridge the gap between theory and applied research by specifying both theory and assumptions in the building of a firm theoretical basis for research in the economics of broadcasting.

Considerations of the "economics of," that is to say the application of economic analysis to, some field derives primarily from considerations of the interaction of the functions of supply and demand for some product within some market under certain conditions. Such an interaction, commonly resulting from the interplay of what is referred to as the laws of Supply and Demand, is largely independent of outside influences, or externalities, within the specific (assumed) structure of the market. That is, the impact of the context of analysis takes place primarily in the building of the supply and demand model, rather than its later functioning.

The study of broadcast economics can be seen as essentially consisting of three parts. First, there is "structural" research into the assumptions of the model such as industry structure and likely behavior patterns. Then there is research into the factors influencing the development of the supply and demand functions themselves, which can be considered as the study of "value" in broadcasting. Finally, there is what could be termed "output analysis." This area covers research into the application of the supply and demand market model to real or potential changes in status; that is, the study of economic impacts in broadcasting. In building towards an integrated framework for future analysis, this paper will examine first issues of structure, then value.

The Good

The quote opening this section was taken from a paper by Landau and Davenport (1953) criticizing the use of economic models without proper theoretical development. While working from that reasonable basis, much of the potential impact was muted by a

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magazines, that profits may well be higher with restricted audience: that going after a selected fragment of audience is more profitable than going after mass audiences.

improper consideration of what the products of media were, and thus a misconception of the results of the application of economic analysis. Specifically, they ignored the role of advertising in most of the mass media. It is interesting to note, though, that the only published response to their study was a paper by Currier (1960) which restricted itself to newspapers; there was apparently little initial reaction to the assertion that the product of the broadcast industry was its signals and programs and its consumers the general public.

Even in the study of economic theory was this idea reinforced. Early consideration was given to television as an example of what Samuelson (1958) referred to as a pure public good. Here again the perceived product of television was its signal, and the consumers of that product were the audience. And while the merits of Samuelson's definition and example were debated in the literature (Minasian, 1964, 1967; Samuelson, 1964, 1967; Buchanan, 1967), the conception of the signal/program as product remained unchallenged. This debate focussed on the relative efficiency of pay vs. "free" television.

This focus on social welfare criteria and broadcast signals as the product of this industry by economists was furthered in the considerable literature on program diversity.[2] Here, the good which was considered in examinations of social efficiency and welfare criteria was once more the programs (and signals) produced by broadcasters. Most of these articles focussed on the question of the relation of the structure of the broadcast industry to the production of a diversity of programming options.

In these, it was implicitly assumed that, as profit-maximizers, broadcasters would automatically seek the highest audience possible. Economic behavior was generally simplified to the seeking of the greatest possible audience under the limitations of various structural market constraints. Similarly, the presumption underlying the conceptualization of social welfare was that it could be measured by the diversity of programming available for consumption, particularly the availability of what was termed "minority-interest"

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[2] The literature on diversity, or competition, in broadcasting includes work by Steiner (1952, 1979), Wiles (1963), Blank (1966), Greenberg and Barnet (1971), Levin (1971b, 1980), Manning and Owen (1976), Beebe (1977), Litman (1978, 1979a, 1979b), Owen, (1978), and Braunstein (1979).

programming. If any consideration was given to the economic value of advertising, it was usually expressed as a straight return per viewer-hour (Webbink, 1973).

Amazingly, many of the issues and results of this period of intensive research on the issue of diversity in television can be found in a pioneering 1949 dissertation by Steiner (1979; also see Steiner, 1952) examining the nature of competition in radio. Examining the radio industry under the dominance of networks, Steiner developed both the methodology used in later studies, and the insights into the development of networks and the limiting structure of the industry which seemed to define the allowable degree of competition and diversity as evidenced in programming. While focussing on the program as his variable of interest, though, Steiner (1979, p.8) did state that in the functioning of the industry "the program is often only a by-product." The true economic product of the industry was time; specifically, broadcast time which could be used to reach an audience. Regretably, it seems that the insights and findings of this work were largely lost to later researchers, forcing independent development of the insights contained therein.

While it has long been recognized that the broadcast industry was largely financed by advertisers (cf FCC, 1938), early considerations of the output of that industry focussed on an examination of programming. However, the beginnings of a shift in theory from a focus on programming can be found in a consideration of the impact of the economic (structure) of broadcasting upon policy formation published by Coase (1966). Here Coase stated that the broadcast industry was financed by the advertiser, and thus the consumer of programming was barred from direct participation in the determination of either the type or amount of programming offered. This was reinforced in part in Kahn's (1974) analysis of broadcasting as a "quasi-utility" with the argument that since the public is not involved in the revenue process there is no need for rate regulation. While there can still be seen in this argument the perception that programming is still the product, there is here also the conception of advertising as a product itself.

This beginning shift was further evidenced by Borchadt's (1970) affirmation that television as an industry was dependent upon advertising for financing. Finally, with Melody (1973, p. 12) and Owen, Beebe, and Manning (1974, p. 4) came the explicit statement that TV stations are in the business of producing audiences, not programs, and that the product of television is therefore measured in terms of people and time. The concept of advertising (or audience) as the economic output of broadcasting, or its product, has been affirmed in more recent research (Long, 1979; Larson, 1980; Parkman, 1982), which noted that the direct participants in the market were stations and advertisers.

The conception of program as economic product, however, proved to be tenacious. In one of the earliest general tracts on the economics of television Noll, Peck, and McGowan (1973) still asserted that a distinctive feature of the industry was that TV gave away its product, i.e. its signal and programs. More recently Levin (1980) asserted that the basic function of networks was to act as a middleman, exchanging the products of program for audience. This notion is somewhat traceable to Wiles' (1963, p.198) assertion that broadcast programming was a new kind of product: specifically, "the mere vehicle for the advertisement of another product." Thus, in some areas focus has remained upon the intermediate, though more visible, good produced by broadcasters, even with the recognition of the existence of economically more important products.

It should be clear, however, that as far as the economics of broadcasting is concerned, the proper, final, product to be considered is the access to audience provided to advertisers. While programs and signals are in fact products of broadcast stations and networks (insofar as they are produced by those entities), as noted by Landau and Davenport (1959) and Noll, Peck, and McGowan (1973) such product is given away: no price is charged and no revenue is collected. Changes in signal and programming will thus have no economic impact except as inputs in the determination of that good which is offered for sale: audience (directly through attractiveness or reach or indirectly through cost considerations). The motivating factor in economic behavior is the generation of profit; thus

the appropriate product or good for economic considerations must be that through which profit is generated. For broadcasting, that implies the basic source of funding: advertising.[3]

There is another way to look at this disparity in perception as to the product of the broadcast industry. Clearly, the final product of broadcasting, the good which is bought and sold in the marketplace, is the access to audience. There remains, however, the question of how that audience is produced. It is clearly not produced directly, but through an exchange of intermediate goods. Members of the audience exchange their time, and hopefully attention, to the broadcaster in exchange for the programming the broadcaster provides for that audience member's consumption. As stated, somewhat colloquially, by Melody (1973, p.12): "the bait for attracting an audience is a program." Thus, the program can be seen as an intermediate good in the production of the audience for the advertising-supported broadcaster.

Thus, it is not denied that the signals or programs are goods in and of themselves, or that they might have impact upon the "economics of broadcasting." In fact, both the signal and the programs it carries can be seen as important input factors influencing the production of the final good of access to audience. The end result, and the focus of study, however, must remain upon that which generates revenues and profits for most broadcast enterprises.

It should be noted that not all stations are advertiser-supported, and for those alternatives must be sought. As stated earlier, consideration in this study will thus be restricted to the commercial broadcast industry. This will not include pay or cable operations since their financing is primarily by alternative means. However, for what is commonly called commercial broadcasting, the primary good upon which economic considerations should be based is access to audience, primarily represented by the advertising spot.

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[3] There is considerable empirical research noting the link between audience, advertising, and revenues. See, for example, Peterman (1971), Bowman (1975), Besen (1976), Bates (1983), Fournier and Martin (1983).

For the immediate purposes of this study, then, the central concept upon which the framework of theory and application of broadcast economics is based is the notion of the audience as the product of broadcasting; the good for which supply and demand functions are appropriately defined and towards which economic behavior is directed within the marketplace. To be precise, in fact, it is access to audience for a period of time via the broadcast signal which is the good in question; a good which is represented by the broadcast spot.

Features of the Broadcast Good

There are several features of audience access through the provision of broadcast time to advertisers which make its economic treatment distinctive. First is an expansion of the issue of time, in particular the length of the broadcast segment: there are the short (15 to 60 seconds) drop-in spots called announcement time, and the longer segments (five minutes or longer) generally called program time which require the presentation of programming (Peterman, 1965). Researchers have looked at both spots (Bates, 1983) and blocks (Besen, 1976, 1978; Park, 1978) empirically, finding many of the same pricing influences. It seems likely, however, that these two forms of audience access may be of different types, with slightly different markets. To maintain uniformity in treatment, this report will concentrate on a consideration of broadcast spots, with the presumption that blocks would be treated in essentially the same manner.

A second feature of this good, as epitomized by the broadcast spot, is its perishability. Access to an audience, at a particular time, is a classic example of a perishable good: once that time has passed, the good no longer exists or has value. Further, as a good such access can not be transferred to other markets: the particular audience in question is immobile. As such, broadcast spots can neither be stockpiled nor moved in search of more lucrative markets. This feature has been commented on in several works addressing the nature of broadcast advertising (e.g. Peterman, 1965; French and

McBrayer, 1979), although it does not seem to have been incorporated in the mainstream literature, at least explicitly.

Another important economic aspect of broadcast spots is the existence of substitutes for that good. Access to an audience can be achieved through a variety of channels; thus, for the individual advertiser, the demand for broadcast spots is highly elastic (Noll, Peck, and McGowan, 1973). That is, the advertiser will quite likely switch out of television should the price rise, or into it with a fall in price, relative to the cost of other media access. This is reflected in early research by Kinter (1948a, 1948b) and McCombs (1972) which have suggested that spending on advertising tends to be constant in any market, and that the various media in that market compete for shares of that total.[4]

Using an approach derived from ecological theory, Dimmick and Rothenbuhler (1984) have attempted to measure the degree of this competition among major advertising media. While finding competition, they also noted that the various media occupy distinct "niches," or degrees to which they make use of various advertising resources. Thus, while other media compete for the advertising dollar, they are not perfect substitutes for broadcast advertising, having different features and degrees of effectiveness (Levin, 1960; Hileman, 1968; Manning and Owen, 1976; Ehrlich and Fisher, 1982) which tends to mitigate somewhat the influence of the presence of close substitutes.

Finally, a further important aspect of broadcast spots is that their supply is essentially fixed, particularly in the short term. In a consideration of network television advertising, Bowman (1975) found that the supply of broadcast advertising time was highly inelastic, that price had an insignificant effect on the quantity supplied. This may be due in part to the fact that the economic good of broadcast spots is comprised of two fixed inputs: audience and time. Time is of fixed supply, setting an upper limit as to the availability of

[4] This notion is supported by current work on the economic theory of advertising, which suggests that the total demand for advertising is determined by factors independent of the media used (Ehrlich and Fisher, 1982).

broadcast spots (of whatever duration). This upper limit, however, is never approached, as other forces act to further restrict the supply of these spots.

These forces could collectively be called "enlightened self-interest." A key aspect of this is the requirements and policies of the FCC. While not directly controlling programming, the need to met certain standards and obtain license renewals have had the effect of limiting the proportion of time spent on advertising spots.[5] In addition, it was found that "the value of advertising to the advertiser is sensitive to (both) the total amount and proportion of advertising in the medium," providing additional pressure on the broadcaster to restrict the amount of advertising spots supplied (Noll, Peck, and McGowan, 1973, p.34).

The presence of *de facto* standards was particularly reinforced in television by the network-dominated provision of programming, which led to the rise of uniform program lengths. This, combined with the pressure of the fixed, "on-hour," broadcast schedule, acted to predetermine to a large extent the total amount of time available for broadcast spots for any particular television broadcaster. On the other hand, programming and Code limitations on the amount of broadcast time sold to advertisers have traditionally been much looser in radio, which has presumably led to a greater degree of flexibility in supply to that branch of broadcasting.

The Players

For economic analysis there are two primary "players:" economic actors (individuals or firms) whose behavior is fundamental for both theory and application. There are those who produce, or supply, the product, or good, and those who consume, or demand, it. Clearly, one of these is the broadcaster, as either a station or as a network, depending

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[5] This influence was evidenced in various Commission statements and documents tracing back to the Federal Radio Commission in 1929 and influenced the development of a series of self-regulating Codes enacted by the National Association of Broadcasters which proscribed various limits on the type and amount of advertising which could be presented. For examples of such statements and Codes, see Kahn's *Documents of American Broadcasting* (1978).

upon the level of analysis. The perception of the identity of the second player, however, has been tied to the perception of what constituted the good.

In Owen, Beebe, and Manning (1974, p.7), a figure was presented which identified the principal actors in the television industry and characterized their interrelationships. Named as the players in commercial broadcasting were viewers, advertisers, stations, networks, the Federal Communications Commission (FCC), and program producers and syndicators. These players were linked in what can be seen as essentially three markets: the market for programs as input goods, the market for programs as output, and the market for audiences. As the first of these markets is for an input to the production of broadcast goods, it lies outside of the scope of this work and will therefore not be here addressed.

As noted above, early considerations felt that the (programmed) signal was the good, and thus the general public who might be expected to consume it provided the second player. As an important intermediate consumer as well as a component of the good in question, the general public remains an influencing factor. With the shift to the consideration of the appropriate good for analysis being the audience itself came the rise of the definition of the advertiser as the second basic economic force (actor) in the marketplace (Long, 1979; also implicit in Webbink, 1973; Korn, 1977; and White, 1977).

There is yet another actor in the economics of broadcasting. While not usually considered a direct participant in the marketplace, the government, or more appropriately government regulation, has proved to be a significant force in the marketplace (cf Borchadt, 1970; Crandall, 1971, 1974; Besen, 1974; Besen and Hanley, 1975; Long, 1979). Government policy and regulation has been noted as influencing not only the structure of the market and the industry itself (Smythe, 1960), but the basic behavior of the two principal players (Comanor and Mitchell, 1972; Levin, 1980). Further, the federal government has beer known to directly intercede in the broadcast marketplace, as with the 1971 ban on cigarette advertising.

In broadcast economics, therefore, there are essentially four players in a two player game of supply and demand. Two of these, the broadcaster and the advertiser, are the direct players: the ones whose behavior (moves) determine the outcome of this economic game. There are two other groups, however, who can be said to influence both the structure and the rules of this game, and must therefore be taken into account. Both the government and the general public are involved in the economics of broadcasting, although in most instances as a presumed state or context, rather than active participants.

As an example, consider some of the diversity articles (cf Park, 1975; Beebe, 1977; Spence and Owen, 1977), which take as assumptions various sets of programming preferences (audience behavior). Others (Besen, 1975; Braunstein, 1979) examine the influence of policy alternatives. Even in such articles, where these economic agents (the general public and the government) are treated as variables, they are perceived of as variable states rather than active participants in the broadcast marketplace. Thus even in that portion of the research on the economics of broadcasting which claims programming as its principle economic good, the consumer of that good, the general public, is not treated as an active participant in that market.

This leaves the researcher interested in understanding and/or predicting economic behavior within broadcasting with two active participants in the marketplace: those who seek to sell access to an audience (the broadcaster), and those who seek to purchase that access (the advertiser). It is the interaction of these two forces in the derivation of economic surplus (i.e. profits) which provides the basis for the economics of broadcasting.

The Market

These two economic agents, i.e. buyers and sellers, work within markets for goods. Alternatively, one could state that goods are supplied and sold within markets. Economic behavior and theory exists within the context of a market, at one level or another. Markets are not defined by geopolitical boundaries, but rather by the specific good being examined and those who are interested in, or able to, supply or purchase that good.

What is the marketplace for broadcasting? Conceptually, the marketplace for broadcasting is variable, governed by the nature of the particular product or aspect in question. That is, there is no single broadcast marketplace; rather, there are likely to be a number of ranges, or levels of markets to be considered for both radio and television. Early studies within the FCC (1938, p. 39) indicated that markets for regional and local radio stations were different: "national advertisers preferred stations of high power, and local advertisers utilized stations in their own communities." Following this segmentation, Steiner (1952, 1979) and Levin (1980) argued that the U.S. broadcasting system was composed of several related market segments rather than distinctive, separate, components.

Whether the product in question is program or advertising, the key to the broadcast marketplace is the range and reach of the signal: the potential audience for that broadcast. In the market for programs, the potential consumers are those capable of receiving the program, whereas the demand for broadcast time is created by advertisers in search of access to that audience of program consumers. In either case, it is clear that the market in which those who supply and those who demand seek to trade in broadcast goods is determined by the size and scope of the potential broadcast audience.

With the advent of networking, the market for broadcast time can be seen to operate on several levels, governed by the reach of the broadcast signal. At the local level there are the stations and advertisers seeking to trade in (access to) local audiences. At the highest level, the major networks and national advertisers similarly deal in national audiences. Intermediate level markets exist whenever local markets are aggregated in search of more broadly defined audiences, such as regional networks or special interconnects.

While there may be, in fact, many kinds of broadcast markets, the development of theory in broadcast economics is aided by the fact that these markets are fundamentally similar. That is, that while different levels of aggregation exists, the structure of the market and the behavior of the agents within it appear to remain essentially the same.

Thus, this analysis and development of theory will focus on an abstract conception of the broadcast marketplace; one which should be equally valid at all levels of economic analysis. Only where differences resulting from the level of aggregation become important will they be noted and discussed in depth.

There are several features of the broadcast marketplace which must be addressed for the proper application of economic theory. Key among these are issues of structure. Economic analysis started with the concept of perfect competition, where there were sufficient numbers of both buyers and sellers in the marketplace that neither exercised any control over the functioning of that market. Markets are seldom perfect, however, resulting in market structures which force alteration of the basic economic theories and approaches through the influences of the number and relative size of the market participants and the uniformity of the product involved.

For the most part, it is widely recognized that broadcast markets are not "perfect." The number of suppliers (broadcasters) is restricted, for the most part due to technical and policy limitations. This results in a limited number of suppliers in any market (and significantly fewer television than radio signals), which can result in one of three basic economic structures on the supply side. First is the case of monopoly, where only one supplier exists. In broadcasting, such a supply structure is limited to a few local markets, with little overall impact.[6]

The second case is likely to be of greatest interest in the consideration of television markets. This is the structure termed oligopoly, which exists when a small number of firms supply most or all of the product in a market. The national TV market for advertising is an excellent example of oligopoly. While there are a number of alternatives, the three major networks at any given time, control access to 70 to 80% of the television audience, and can supply that audience to advertisers. With such dominance, the major

[6] Recent Nielsen studies estimate that only 3% of U.S. television households could receive three or fewer stations.

networks, singly or collectively, can be seen to exercise a degree of control over the market.

A third basic structure is called monopolistic competition, where a fair number of firms compete to supply a somewhat differentiated product. Each firm can influence the market somewhat, but not to the degree exercised by the oligopolist or the monopolist. Further, this influence results in large part from the differentiation of the firm's product. This structure can be seen in many of the larger radio markets, where the presence of a moderate number of stations, and the targeting of audience through program differentiation reduce concentration.

Most broadcast markets can be classified as either examples of oligopoly or monopolistic competition, depending upon the level of concentration and the degree of program differentiation in the particular marketplace being considered. Within the literature, television markets have generally been treated as oligopolistic (Flynn, 1970; Peterman, 1971; Noll, Peck, and McGowan, 1973; Long, 1979; Levin, 1980; and Pearce, 1980) with a 70% or higher share for the top three firms in almost all markets (Fournier and Martin, 1983). Further, the early studies made the presumption that some degree of market power existed, although recent studies (Fournier and Martin, 1983, Woodbury, Besen, and Martin, 1983) have questioned the validity of that assumption. Not so much attention has been granted radio; currently, the larger numbers of stations in most markets, the greater product differentiation, and the absence of major program suppliers suggest that monopolistic competition may be the more appropriate market structure. This possibility was, in fact, raised in Steiner's (1952, 1979) pioneering study of the structure of the radio industry in the 1940's.

One study by Larson (1980) directly examined the question of concentration in the U.S. television industry. Examining only the national market, he found that the networks were highly concentrated, but that on a national basis, stations were not. This last is hardly surprising, considered the number of commercial television stations and the FCC's

ownership limitations. Larson did note, however, that local market concentration is likely to be higher than national measures.

Larson also examined another aspect of market structure: buyer concentration. Crandall (1972) had suggested that there appeared to be an "unexplored" degree of monopoly power in advertising markets, but among the buyers. Concentration among buyers, as with sellers, can influence the economics of the marketplace. Outside of competition, there are two basic "buyer" structures, monopsony and oligopsony, which mirror the seller structures of monopoly and oligopoly.

Larson (1980, pp. 34–5) found that, for total advertising billings, the industry was mildly oligopsonistic, with the eight largest advertising agencies controlling between 25-40% of the total purchases. Network advertising was more concentrated, with the eight largest firms again purchasing 40–60% of the supply. While figures were not available for local markets, it is likely that local advertising is less concentrated. As noted by Crandall (1972), however, fewness does not necessarily imply power or control.

There remains one more aspect of concentration to be considered: whether the current levels are by any means necessary. That is to say, can one expect drastic changes in the basic structure of broadcast markets? By and large, it can be stated that broadcast television markets are, and are likely to remain, oligopolistic. This derives primarily from various technical and legal restraints imposed largely by the FCC.[7]

The actual number of signals available is largely dependent upon economic considerations as well federal regulation. Broadcasting in the U.S. is a private enterprise, and requires over time the generation of enough revenue to cover both operating and investment costs. Smythe (1960) argued that the heavy initial investment in broadcast television was one barrier to entry. Other early studies (Greenberg, 1969; Webbink,

[7] First, FCC policy set aside a limited bandwidth for television signals, and fixed output power limits. In doing so, that agency fixed certain technical limits to the number of stations available. Then, to promote their stated goal of local service, the FCC assigned those available stations to cities and towns across the U.S. Thus, in any area, there are only a fixed number of licenses available. Researchers have argued that such policies had the effect of restricting competition (Levin, 1971a; Crandall, 1974; Long, 1979), and of generating scarcity "rents" to broadcasters (Levin, 1962, 1964, 1971a, 1975).

1973; Besen and Hanley, 1975; Korn, 1977) have found that a certain minimum audience must be served in order to generate sufficient revenue for private investment in television properties.

Another factor, in some degree independent of the number of signals actually available, is programming. Recall that oligopoly exists when a few firms control a significant proportion of the supply of the product. Considering access to audience as that product, the three main networks and their affiliated stations have that control in all television markets. Much of the early work on television economics focussed on the generation and economics of program production (cf. Owen, Beebe, and Manning, 1974; and the literature on diversity).

Historically, the three commercial television networks have generated the bulk of the programming available for television broadcasts, garnering between 60 and 100% of the viewers during their broadcast hours in local markets through their affiliates. Several studies have been commissioned by the FCC over the years as to the viability of additional networks, with the general conclusion being that the high program costs and the lack of stations available for affiliation have made such economically non-viable. There was even doubt as to the initial viability of three networks, although Litman (1979b) has recently concluded that the three major networks now compete on an roughly equal footing.

Although the programming market has loosened considerably over the last few years, most (non-movies) programming is generated for the major networks, giving the national marketplace an oligopolistic look. Thus, it seems that both legal and economic constraints have acted to provide the television industry with its basically oligopolistic structure. However, with technical changes and the advent of cable and low-power television, it is not clear that that structure need remain so. As with radio, the opening of new technologies and general expansion could well result in a shift of structures, perhaps to the monopolistic competition which seems to be becoming more prevalent in radio.

Summary

In contrast to the quote opening this section, it would appear that the broadcasting industry does sell its product according to the principles involved in the economic laws of supply and demand. That is, of course, accepting the conclusion that the proper product of broadcasting for economic analysis is the access to audience it offers through the sale of broadcast time. Discussions in this section of this product have also noted several features which will in fact influence the application of these laws. Specifically, it was noted that broadcast time is a perishable good with several close, but not perfect substitutes. Further, it was noted that certain forces act to restrict the supply of that good which can be made available in any market.

It was further noted that the principal economic actors, the broadcasters and the potential advertisers, operate in a variety of markets. It was argued that while these markets could vary in both size (from local to national) and medium (radio as distinct from television), that the basic elements of these markets remained consistent throughout the various market forms. It was noted, though, that there was one aspect of these markets which varied: its structure, or degree of concentration, ranged from monopolistic structures in some small communities to oligopolistic or monopolistic competition structures in many of the larger markets. It was argued that radio markets tended towards monopolistic competition, while television markets evidenced oligopolistic structures.[8] It was further noted that national markets evidenced a degree of oligopsonistic structure, while local markets were generally more competitive.

While these properties do tend to preclude broadcasting from the standard considerations (examples) of supply and demand under perfect competition, they by no means invalidate that approach. In fact, the unique features of broadcasting and its economic good

[8] There is some difference in opinion and research, however, as to whether the television industry derives, and/or wields, any degree of market power from the demonstrated high levels of concentration. Pearce (1980), for example, asserts that the major television networks wield substantial power, both economically and politically. Some recent empirical studies, however, have failed to find any evidence of such power being exercised (Fournier and Martin, 1983; Woodbury, Besen, and Martin, 1983).

make such an approach even more useful, in that they render questionable the standard economic behaviors and outcomes which may have been used in place of a more rigorous analysis. Thus, it would seem both reasonable and prudent to develop a fundamental supply and demand model for the broadcasting industry, one which can be used to provide the basis for economic analysis. This paper will now attempt to identify and develop such a model, based upon the results of earlier research into the structure and economics of broadcasting.

A SUPPLY/DEMAND APPROACH TO BROADCAST ECONOMICS

Over time, various forces act to induce changes in the broadcast marketplace. Research efforts in this area have tended to focus upon ad hoc examinations of economic impact, largely through the estimation of actual impact, through statistical modelling, which might be attributed to the factors in question. Such efforts have been limited by the lack of a general theory or approach for the explanation, modelling, or prediction of economic impact. And this lack has contributed to problems in isolating the impact of the factor in question from other potential influencers of revenue shifts.[9]

The second problem is one that can be addressed by a more careful, refined approach to the study of economic effects; through the recognition of the multiplicity of forces and their inclusion or control in the analysis. The second problem can also benefit from the resolution of the first: having a general model can lead to the modelling of impact of forces in isolation. Once an impact is theoretically determined, attempts can be made to isolate that effect from the others contributing to real shifts or changes. The resolution of that first problem, however, requires more than additional care or precision.

This section of the paper will address this lack of theory by proposing the use of basic economic supply/demand analysis as a general model for the consideration of economic impact. Such a model, developed on an aggregate (market) level, provides an approach which is both simple and widely applicable. Further, it is a procedure which easily lends itself to graphic presentation and analysis, particularly at the gross level where this consideration will limit itself. Limiting the model to the market level would also preclude the need to base the theory upon presumptions of individual pricing policies, a complicated

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[9] The use of statistical modelling as evidenced in many of the studies previously discussed allows for the estimation of the degree to which changes in an identified dependent variable co-occur with changes in a measured independent variable. Such procedures cannot generally distinguish the contributory impact of covarying independent variables, or the "influence" of variables which are not explicitly included in the fitted model. Problems in estimating actual influence may also occur when there are factors with potentially opposite impacts upon the measured dependent variable.

matter in broadcasting. This market level analysis, though, will be based and developed in part upon a consideration of supply and demand at the level of the firm.

Supply/demand analysis is basically a microeconomic procedure which involves the consideration of two functions: a demand function for a product within a market and a supply function for the same product in the same market. These functions can be analyzed jointly at the market level to obtain (in most cases) an equilibrium point which gives the economically optimum mix between the price and the quantity of the product exchanging hands for that market. This point, occurring where the supply and demand curves cross determines the (average) price and quantity of the product sold in that market, which in turn determines the revenues generated by that product in the market. Thus, examination of the impact of some force or factor upon the supply and demand functions, and thus upon the equilibrium point, should allow predictions to be made concerning that force's economic impact.

The adaptation of this procedure to the consideration of broadcast output or revenues requires that consideration be given to three central issues: the suppliers' (broadcasters') behavior, both individually and collectively, in determining the supply of their product (the access to viewers through broadcast time) to be made available at any particular price; the potential purchasers' (advertisers') behavior in determining how much of the product is to be purchased at any given price; and how these behaviors are permitted to interact in the (broadcast) marketplace. These concerns affect and determine the basic shape and location of the specific broadcast advertising supply and demand functions, and the possible limits upon their placement and/or displacement in the consideration of impact.

It should be cautioned here that this approach will restrict itself to a general consideration. This will preclude the precise determination of any specific supply or demand function for any single station, network, and/or market. As the purpose of this paper is the development of a <u>general</u> theoretical approach, the focus on rough, general functions, and average, or aggregate, price seems reasonable.

The Demand for Broadcast Advertising

The potential purchasers of broadcast advertising seek the effective transmission of a message to an audience. Demand for advertising is thus dependent primarily upon the ability of that advertisement to reach an audience and deliver its message. As aggregate audience within a market can be viewed as being fixed in the short run, comparative demand focuses on the ability of broadcast spots to convey their messages to all or part of that aggregate potential audience. The vital aspect of this in the determination of demand for broadcast advertising is the realization that broadcasters have competition and there are differences in the reach and/or efficiency of any particular message.

As noted in an earlier section, there are substitutes for broadcast advertising. And though neither competing stations nor the alternative media can be considered perfect substitutes, as they reach differing audiences with differing effectiveness, their presence has a significant impact upon the demand for advertising. While demand is basically governed by the concept that the cheaper the product, the greater the demand for that product, the presence of substitutes mediates the viable range of the demand function. Economists have noted that the more (and better) substitutes there are available for a good, the greater its price elasticity (Ferguson, 1972, p.105).[10] Noll, Peck, and McGowan (1973) have noted that the demand for broadcast spots was highly elastic. That is, should the price of broadcast advertising become significantly more expensive than other media or stations, advertisers will switch *en masse* to those other outlets, and vice versa.[11]

Therefore, the basic shape of the demand function for broadcast advertising can be illustrated by the demand curve in Figure 1. This curve can be described as a "reversed S;" starting from the left, a shallow sloping line reflects the substitutability of other media

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[10] Demand is said to be (price) elastic if a given percentage change in price will result in a greater percentage change in the quantity demanded.

[11] The concern over relative prices is also demonstrated by the presence of a generally accepted and widely used non-media specific of the cost of advertising: the CPM (cost per thousand households delivered). Thus, while there is likely to be, for each medium, a range of prices which will attract advertisers to varying degrees, the presence of possible substitutes means that there are limits to the range of prices which are likely be encountered.

for advertising purposes at higher prices; then, over a range of prices which are roughly comparable to those of other media, the demand curve assumes a steeper, more typical slope; finally, at the lower range of prices the slope of the curve flattens again, reflecting the substitutability of broadcasting for other media. Bowman (1975), in fitting a linear demand curve for television spots, estimated the slope of the basic curve to be on the order of 0.1, similar to the flattened areas of this model. There is no reason to assume, however, that the demand curve is, in fact, linear; Bowman's findings can thus be seen as supporting the curve illustrated in Figure 1. Further, there is no reason to expect that the basic shape of the demand curve for air time should be any different for radio than it is for television.

[Figure 1 about here]

It should be noted that there are other determinants of demand, particularly the size and type of audience attracted and the number and type of alternative media available. These, however, are market-specific factors, whose effect lies more in the placement of the demand function than its basic shape. The range of viable prices for the demand curve, i.e., its vertical placement in the graph and the width of the middle section, will depend upon the amount of competition faced and their comparative pricing actions. The horizontal placement of that middle section, i.e., the relative size of the demand, will depend upon such factors as the particular characteristics of the audience attracted, the number and behavior of potential seekers of that audience, and general economic conditions.

It should be emphasized, however, that the basic shape of the demand curve should remain constant for all stations (including both radio and television stations) and markets. While the specifics of any demand curve will respond to market criteria, it is expected that only the complete absence of advertising alternatives will result in a drastic change in the basic shape of the demand curves faced in the broadcasting industry. Thus, Figure 1 provides a reasonable, general, graphic model of the demand for broadcast time.

The Supply of Broadcast Advertising

It is one of the contentions of this paper that the supply of broadcast advertising in a market is largely determined by non-market forces. Obviously there is an absolute upper limit to this amount, imposed by the fact that both time and entry into the marketplace are restricted. Broadcasters must be licensed to a market, and thus the number of suppliers can be viewed as being fixed, at least in the short term. In addition, broadcasters can not realistically sell more time than they are on the air. Thus there exists an absolute limit to the supply of broadcast advertising in any market.

This upper limit is never approached, however, as other forces act to further restrict supply. The first of these forces lies in the nature of the commercial broadcast industry in America: the attraction of audiences for advertisers. The broadcaster must provide programming to attract the audience he sells to the advertiser. As advertisements have yet to prove to be very popular programming, the broadcaster must set aside a considerable portion of his broadcast schedule for non-commercial programming. In fact, there is a trade-off involved: Noll, Peck, and McGowan (1973) noted that an increase in the amount or proportion of advertising decreased its value.

A similar force is acting in the form of broadcast regulations. The Federal Communications Commission imposes certain conditions upon broadcast license holders in the form of required announcements and an obligation to "serve the public interest." These conditions require an additional segment of the broadcast schedule, further restricting the supply of broadcast advertising. In addition, the FCC has commented upon the amount of broadcast time devoted for advertising purposes on several occaisions (Kahn, 1978), and has twice cited "overcommercialization" as a rationale for license revocation (Sterling, 1984, p.299).

There is another force which acts to restrict the potential supply of broadcast advertising, involving a special feature of some entertainment programming. In large part this force arose from the National Association of Broadcasters' Codes, which used to set precise

limits upon the amount of commercial advertising available in any time period. Before these codes were revoked, the major networks and most stations had agreed to abide by the restrictions imposed by the codes, and programming was produced with those Codes in mind.

This meant that "holes" of specific length and position were left in the programs delivered to the networks and/or individual stations, especially in television. As the networks also kept to specific schedules, for the most part, and affiliation and syndication agreements limited the abilities of individual stations to cut programming, stations could not readily adjust the amount of time available to them for sale to potential advertisers. In the short run, then, broadcasters in television, whether stations or networks, were presented with a largely fixed fraction of broadcast time for sale.

There remained some control over supply, through the expansion or contraction of operating hours, or through the expansion or contraction of scheduled commercial breaks in locally produced programming. This latter form of control is evidenced most clearly in radio, where most of the programming is locally produced, and where supply therefore can more easily be manipulated. There was also some concern expressed that the revocation of the Codes by the courts would result in a flood of additional commercials, but that fear has not yet been realized. The need for pre-produced non-local programming in television should keep the supply of commercial time restricted in this manner for the foreseeable future.

Thus, it seems appropriate to consider the supply of broadcast time for advertising, particularly in television, largely fixed for each station. As in most other areas where there is little control over the supply of a perishable good, the basic pricing policy seems to be to attempt to get as high a price as possible for product. Broadcast time is a perishable product; once the air time has passed, it becomes worthless. Further, it is a product which can not readily be transferred— it must remain in the market to have value. In the short run, then, broadcasters are faced with a high initial marginal cost for their

product, which then drops to near zero until such time when the limit on supply is reached. At that point, the marginal cost of an additional spot is quite high: the costs of providing the additional program base if additional time is available, or the potential cost of contract or license violations if no other source of broadcast time is available.[12]

In general, then, the broadcaster is faced with a short run marginal cost curve as illustrated in Figure 2. The marginal cost curve has (non-infinite) slope to the degree to which the broadcaster has control over the amount of broadcast time available for sale in locally produced programming. Television broadcasters thus face a marginal cost curve as illustrated in Figure 2(a), while radio broadcasters would more generally face the curve shown in Figure 2(b).[13] The behavior of these broadcasters in determining their output, and thus market supply, can be inferred as following the basic economic proposition that producers will maximize profits by producing that output at which marginal cost equals marginal revenue (Ferguson, 1972, p.298).

[Figure 2 about here]

Under perfect competition, where individual producers have no impact upon price, marginal revenue (defined as the net gain from the sale of an additional unit of the product) is equal to price. However, as noted earlier, broadcast markets are not perfect: the appropriate structures are mostly oligopolistic or monopolistic competition, where output decisions of individual producers do impact the market, and thus the marginal revenue curve for individual broadcasters lies below their individual demand curves. However, the more elastic the demand, the closer the marginal revenue curve lies to the demand curve

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[12] Parkman (1982) provided an alternative conceptualization for marginal cost in his assertion that the supply curve for broadcasters was the marginal cost of producing additional viewers. This places the focus on the number of viewers which the broadcaster provides access to, rather than the amount of that access. In the model derived above, audience size is incorporated indirectly in the placement of the demand curve, thus incorporating this concern, while Parkman's approach does not seem to incorporate any consideration of the amount of access to that audience. From Parkman's alternative, though, comes the reminder that the broadcaster's behavior can impact on the demand curve he or she faces.

[13] With the increase in programming services in radio, however, it seems likely that some radio stations will come to face marginal cost curves more like Figure 2(a).

(Mansfield, 1979). The output decisions of broadcasters are therefore apt to be based upon models such as are illustrated in Figure 3.

In the short run, the model for television broadcasters, Figure 3(a), indicates that the broadcaster will produce the basic output, and accept whatever price he can get for that given output level. Thus, whatever demand exists for the station (in the form of one of the demand (D) or marginal revenue (MR) curves), the near verticality of the marginal cost curve indicates that output will remain essentially fixed. In the long run, however, the television broadcaster has a greater degree of control through the expansion or contraction of operating schedule, within certain limits. This is modelled by Figure 3(b), which indicates that the profit-maximizing broadcaster will produce that level of output at which the marginal revenue curve (MR) intersects one of the marginal cost curves (MC_i). As discussed above, the models for radio are similar, but with more variable supply possibilities. These models are presented as Figures 3(c) for the short run analysis and Figure 3(d) for the long run analysis. It should be noted, though, that far more radio than television stations operate at their legal limits. When combined with the looser nature of radio programming, the radio station will face a more continuous long term marginal cost curve than will the television station. The models thus indicate that radio broadcasters will have a greater degree of control over output in response to demand and supply conditions than will their television counterparts.

[Figure 3 about here]

From this analysis, it would appear that the market supply function for broadcast advertising, particularly for television, is characterized by a restricted range in quantity and a wide range in price. This argues for a supply curve for television broadcasters as illustrated in Figure 4(a): a steeply sloping supply curve covering a narrow range of quan-

tity.[14] As there is more control of supply by radio broadcasters, it is expected that the supply curve for radio as seen in Figure 4(b) will not be as steeply sloped, and extend over a wider range in quantity.

[Figure 4 about here]

The Market Model

The aggregate supply and demand functions can now be combined into a single market model. While one must be aware that each particular market will have a unique model and specific placement for the functions, one can define a "typical" market, as illustrated in Figure 5. While it can not be known whether this model fits any particular market, the purpose of the model is to look at shifts in these functions, and not original positions. Thus, it seems reasonable to use this "typical" model to look at general impact.

[Figure 5 about here]

To illustrate the model, this paper will consider how the model illustrates a series of market, policy, and economic changes thought to have an economic impact upon the television industry.[15] In particular, we will examine how supply and demand analysis models the effects of: (1) the 1969 ban on cigarette advertising on television; (2) the general effects of inflation; and (3) the entry of a new station into the marketplace.

The Cigarette Ban

In the late sixties, the FCC and the FTC took steps to remove cigarette advertising from television. The immediate effect of this action was to remove a sizeable portion of the demand for broadcast advertising on television. Considering the television supply and

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[14] As for the derived demand curves, the market supply curve for television spots can be seen as being supported by Bowman's (1975) fitting of a linear market supply curve. In Bowman's various fitted equations, the supply curve is never significantly other than vertical, providing curves similar to those in Figure 4(a).

[15] To avoid a duplication of graphs and models, this examination will restrict itself to the television industry and markets. However, the same analysis could be undertaken for radio, based upon the appropriate graphic models.

demand model, the removal of a portion of total demand implies a shift in the demand curve for broadcast advertising. As the decision did not affect any other media, the substitution effect did not change. Thus, the demand curve would evidence a shift to the left, indicating a lessened demand at all prices. This shift is illustrated in Figure 6.

[Figure 6 about here]

The government's decision, however, did not affect the supply of broadcast spots in any way. Therefore, the supply curve would remain constant. Thus, as seen in Figure 6, the equilibrium point for the model would shift from E to E', indicating a decline in both the average price paid for spots and the quantity of spots sold. And as revenues are determined by the product of price and quantity, and both were less after the ban, the model would predict a decline in revenues.

Letting the market under consideration be the national (network) market for broadcast advertising, a reasonable assumption given the nature of cigarette advertising, the decline predicted by the model can be seen in network revenues at that time.[16] The model therefore was correct in predicting a decline in overall revenues. The impact of cable television upon broadcasters can also be modelled in a similar manner. Accepting the argument that cable would reduce audience for individual broadcasters by supplying additional alternatives, the impact would be felt in a decline in the demand curves for those broadcasters' product, as is modelled in Figure 6. Such a model would provide the theoretical basis for the findings, for example, of Park (1971, 1972) and Noll, Peck, and McGowan (1973).

The Impact of Inflation

Inflation is a pervasive phenomenon, and one that arises from a number of factors and influences. When there has been inflation over time, people generally expect the infla-

[16] In 1971, the year in which the ban took effect, the television networks reported the only decline in net revenues in their history. Revenues dropped from $1.46 billion in 1970 to $1.38 billion in 1971 (Sterling, 1984).

tionary trend to continue, and will therefore act on that expectation, and all the more quickly respond to inflationary pressures. Inflation is therefore apt to impact upon all economic markets in some form or another. The impact of inflation upon the broadcasting industry is one which can be modelled easily through a consideration of supply/demand analysis over time.

This examination will begin with a consideration of the likely influence of inflation upon the demand curve for broadcast time for advertising. As noted earlier, the placement of the demand curve for broadcast time is largely governed by the availability of substitutes, and the prices paid for such substitutes. As inflation is defined as the phenomenon of generally rising prices, inflationary pressure can be seen as leading to a general rise in the costs of alternatives to broadcast advertising. Since the price of broadcast time is bound by these alternatives, the impact of inflation on demand can be seen in an upward shift in the demand curve, as illustrated in the shift from the demand curve D to the curve D' in Figure 7.

[Figure 7 about here]

Similarly, the suppliers of broadcast time are subject to increasing costs. The individual marginal cost curves for the broadcasters will also evidence an upward shift due to inflationary pressures on their various inputs, such as equipment, utilities, programming, and other operating costs. All broadcasters in a market will be subject to similar impacts, with the result that the impact of inflation upon the market supply curve should mirror the impact on the demand curve. That is, as illustrated by the shift from the supply curve S to the curve S' in Figure 7, the impact of inflation upon the supply curve for broadcast time should be a simple upwards shift.

If the influence of inflation are roughly equal for both supply and demand curves, the net effect will be an upward translation of the equilibrium point. That is, the quantity of broadcast advertising sold should remain about the same, only the average price for that

advertising has risen, by an amount which should equal the inflationary impacts. Both price and market revenues, then, should rise by an amount roughly equal to the anticipated or actual inflation.[17] Inflation, through the model, thus behaves as expected, further supporting the usefulness of the supply/demand model.

Adding A Station

We shall now consider an example where the model may not be quite so useful. As outlined in the discussion of the supply function, the overall supply of broadcast advertising in a market is fairly fixed, particularly for television. The greatest impact upon supply then can only come from the addition of a new station to the market, bringing with it its own fairly fixed supply.

The next two graphs examine the likely impact of the addition of a new broadcast station to a television market. Figure 8(a) will consider the addition of a second station to what had previously been a one-station market, and Figure 8(b) considers the addition of a fifth station to a market where there are already four commercial stations. In both cases, the addition of the station has no expected impact upon market demand for broadcast advertising.[18] Individual station demand, however, will most likely be influenced by the fractionalization of the marketplace.

There is likely to be considerable impact upon the aggregate supply functions in those markets, however. As one feature of broadcast advertising was its perishability, it is expected that the shifted curve will evidence at least the same wide range of prices for that quantity as the initial function. The impact of a new station, therefore, is apt to be a shift in the supply curve to the right.

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[17] On the aggregate level this degree of covariation is confirmed by the high correlations of industry revenues with the Consumer Price Index. For radio, between 1937 and 1979, revenues and the CPI evidenced a correlation of 0.987. In television the correlation between revenues and the CPI for the period 1960–1979 was 0.986 (data from Sterling, 1984). In addition, Bates (1983) reported that inflation had a significant impact upon differences in prices for television spots over time.

[18] There is, off-hand, no *a priori* reason to suspect that aggregate demand, which is largely determined by market audience characteristics and the amount of non-broadcast competition available, will be influenced by the addition of a station. It is possible, though, that additional competition within the medium could well result in the attraction of new advertisers, or a more efficient utilization of the existing demand. Thus, there might be a small upwards shift in the market demand curve.

For the first of the considered market situations, this shift reflects a doubling of supply, as seen in the shift from S to S' in Figure 8(a). The equilibrium point will therefore shift from E to E', resulting in a much higher quantity of broadcast advertising sold at a lower (average) price. As price and quantity change in opposite directions, there can be no clear-cut determination of effect. Much will depend upon the precise functions involved. However, some indication of likely effect can be considered for the first example. Examination of the model indicates that the quantity of broadcast advertising sold should almost double in that case. As the demand curve is restricted by the effects of substitutability, it is likely that the average price will not fall to half of the first equilibrium value. In such a case, overall market revenues should increase.

[Figure 8 about here]

In other market situations, the result is not as clear. In the second situation, as the shift in supply is not as great, as seen in the shift in Figure 8(b) from S to S", the likelihood that the drop in average price will match, or be greater than the increase in quantity increases. In such a situation, the model can give no firm insights into the economic impact of a new station coming on the air.

It should be stated that there is some outside evidence in support of the analysis of the first situation. It has been assumed in some FCC economic studies (in particular Korn, 1977) that the addition of a fourth television station to a market would have little, if any, short term impact on the generation of revenues in that market. On the other hand, Commission proceedings in the late fifties and early sixties tended to assert that there was a sizeable jump in market revenues with the addition of a second or third station.

SUMMARY

In this paper, we have developed a simple model for the examination of economic impact in broadcast markets. The model, based upon the logic of supply/demand analysis, can be used to provide a general indication of the effects of factors upon supply and/or demand for broadcast advertising. In most cases, the model can then provide some indication of the nature of an impact upon market revenues, although as was seen in the last analysis this may not always be the case.

The development of this model can also be seen as a step towards the continuing integration of theory and applied research in the field of media economics. Not only is the model itself theoretical, but it is in fact built upon the results of previous research into theoretical aspects of the economics of broadcasting. The model incorporates these findings into its consideration of the structure and behavior of broadcast markets and firms.

It is felt that this model can provide a useful start to the consideration of economic impact, providing a general theoretical basis for such studies. It is also felt, however, that the model as presented is only a start, and could well use further refinement in the search for improved models of broadcast economics.

Figure 1. Demand Curve for Broadcasting

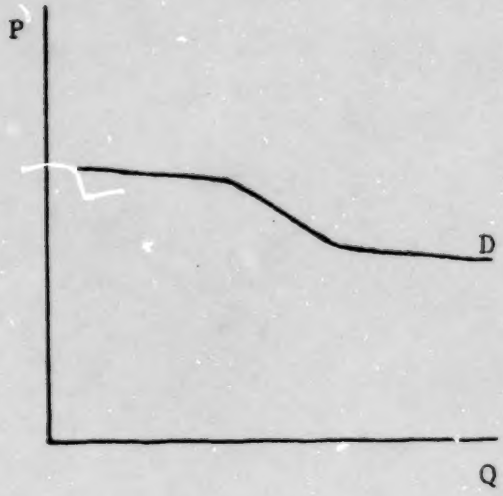
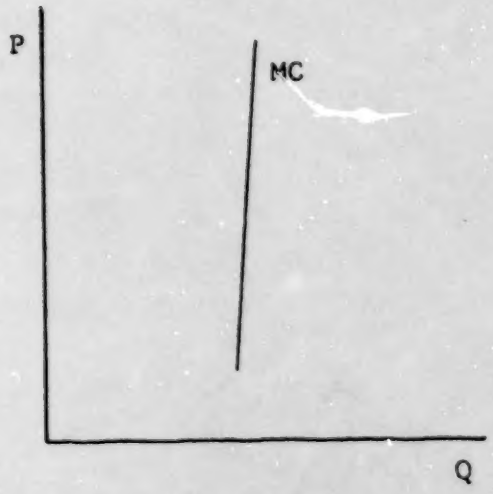
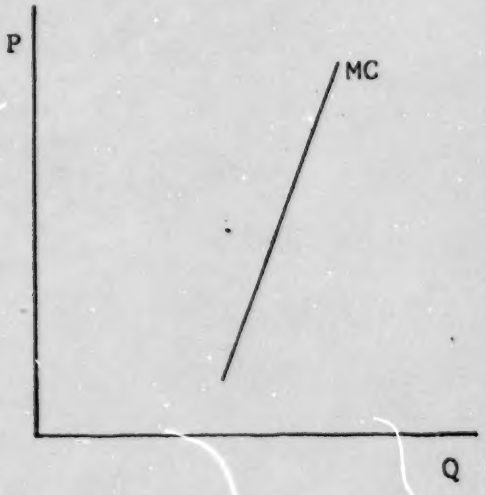


Figure 2. Marginal Cost Curves For Broadcasting

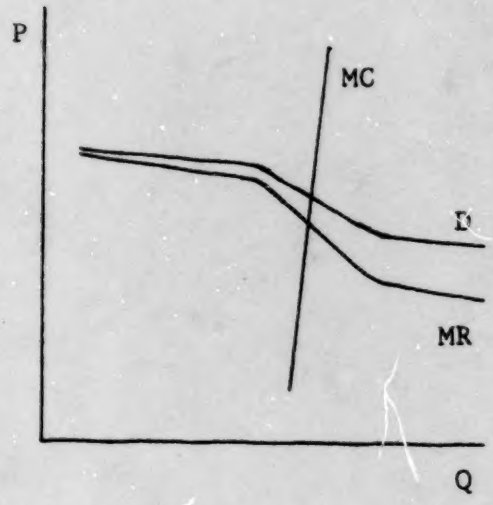


a. Television

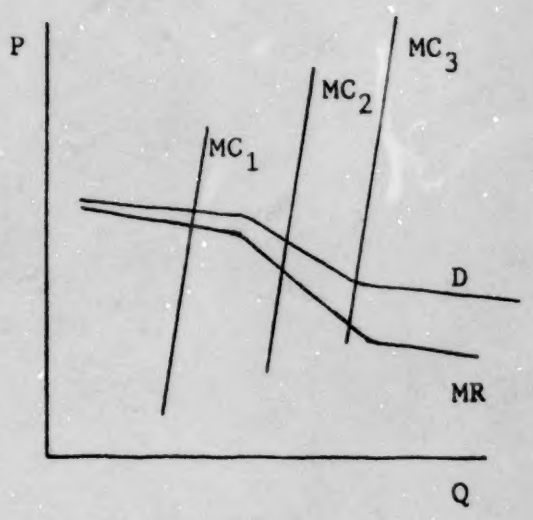


b. Radio

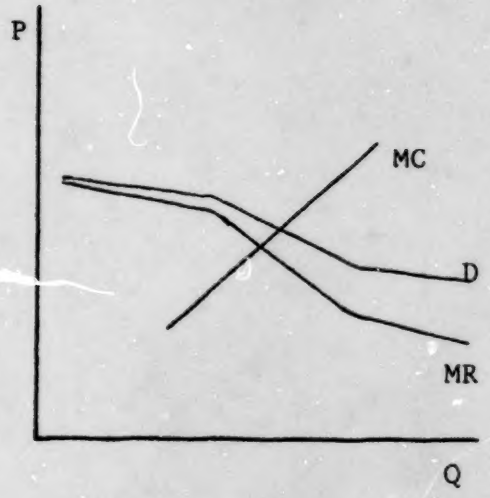
Figure 3. Models of the Firm in Broadcasting



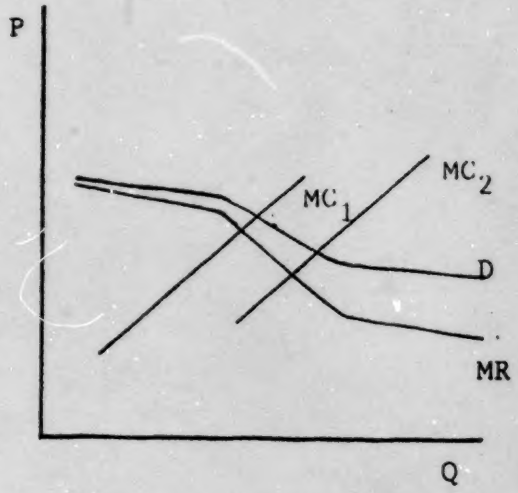
a. Television, Short Run



b. Television, Long Run

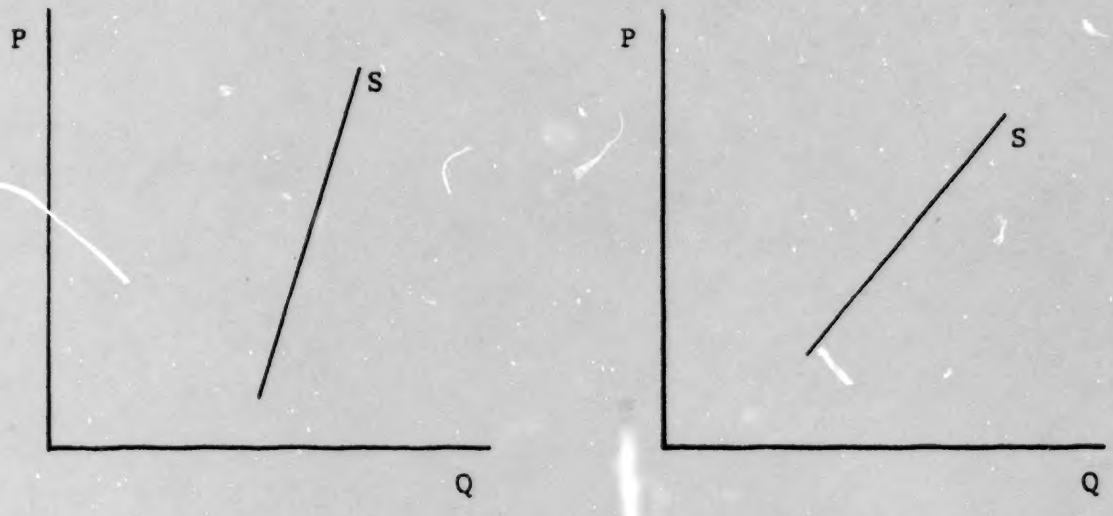


c. Radio, Short Run



d. Radio, Long Run

Figure 4. Market Supply Curves for Broadcasting



a. Television

b. Radio

Figure 5. A Supply/Demand Model of the Broadcast Market

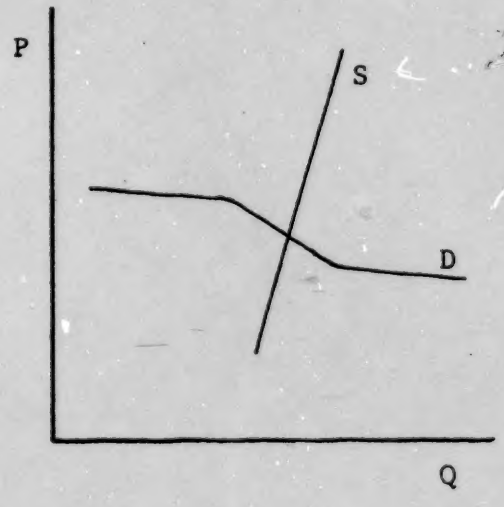


Figure 6. Impact of the Cigarette Advertising Ban

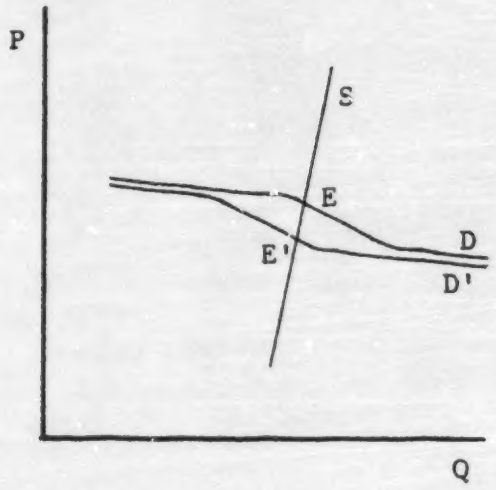


Figure 7. Impact of Inflation

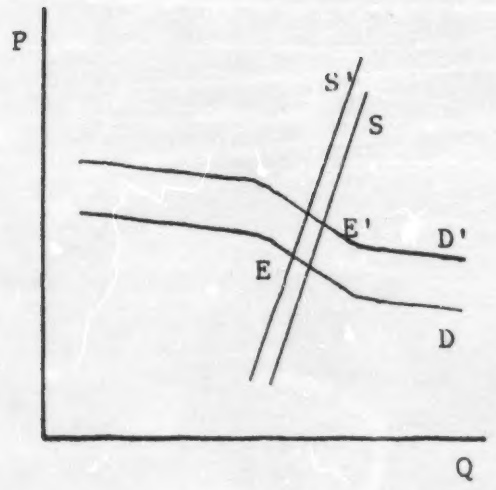
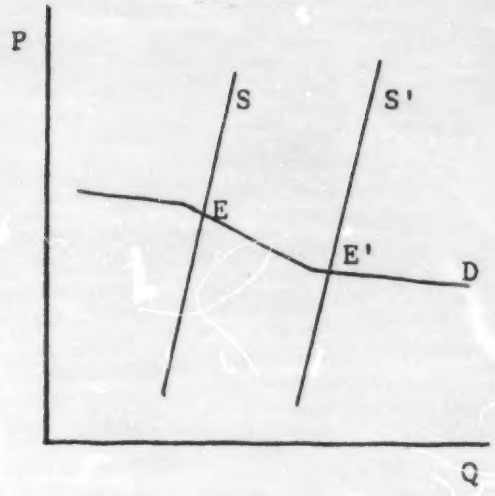
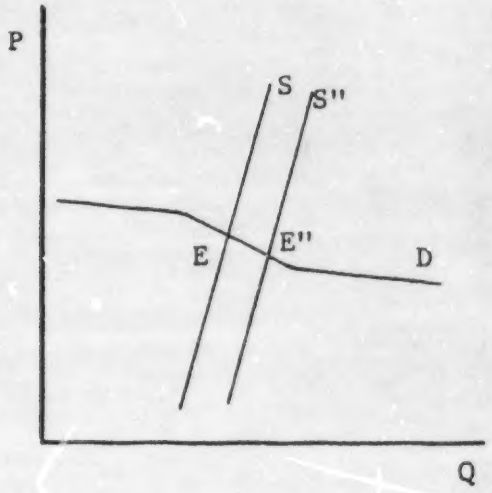


Figure 8. Impact of a New Broadcaster



a. To a Single Station Market



b. To a four Station Market

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